

Name: _____

2017–2018 Mathematics Teacher: _____



Summer Review for incoming PreCalculus H students

Please complete this review packet for the
FIRST DAY OF CLASS.

The problems included in this packet will provide you with the opportunity to practice the mathematical skills you have learned throughout the current school year and will help you to be prepared for the concepts you will learn in PreCalculus next school year. You are responsible for *ALL* the concepts covered in the packet. If you do not remember how to complete a problem, look it up in your notes or online. If you should misplace this packet, you can find a copy posted on the district website: <http://nbhs.northbranfordschools.org/>

A **quiz** will be given on the material within the first week of classes.

You will receive a double homework grade (worth 2 homework assignments) on this packet based on the following criteria:

- Work is received on the first day of class
- All problems are completed
- All work is shown

Evaluate the following expression for the given value(s). Reduce to lowest terms if possible.

1. $\frac{7(x^2 + 8) - x}{16x + 8}, \quad x = -2$

Simplify the polynomial.

2. $(5x + 7)(3x^2 - 6x - 3)$

3. $(3y^2 - 6)^2$

4. $8(y^2 - x) - 3(3x - 6y^2)$

Simplify each expression. Use only positive exponents.

5. $(x^2y^3z^0)^2(2xy^5)$

6. $\frac{x^{-3}y^4}{-2^{-2}x^5y}$

7. $\left(\frac{8^{-1}}{x^3}\right)^{-2}$

8. $(16x^2)^{\frac{1}{2}}$

Factor each polynomial completely. Remember to first look for a GCF.

9. $2x^2 - 2x - 60$

10. $x^3 - 125$

11. $2x^3 + 8x^2 + 5x + 20$

12. $2x^2 + 11x + 14$

13. $a^4b^5 - a^2b^9$

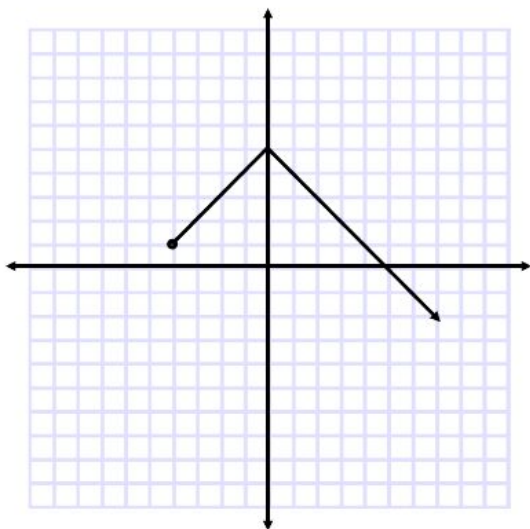
14. $x^2 + 2xy - 8y^2$

15. $25x^2 - 144$

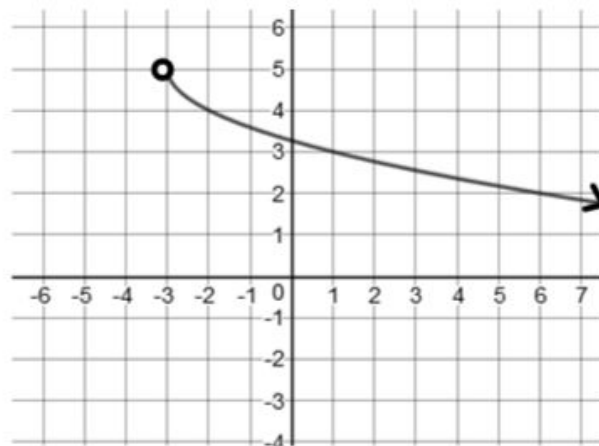
16. $8x^3 + 27y^6$

State the domain and range using interval notation.

17.



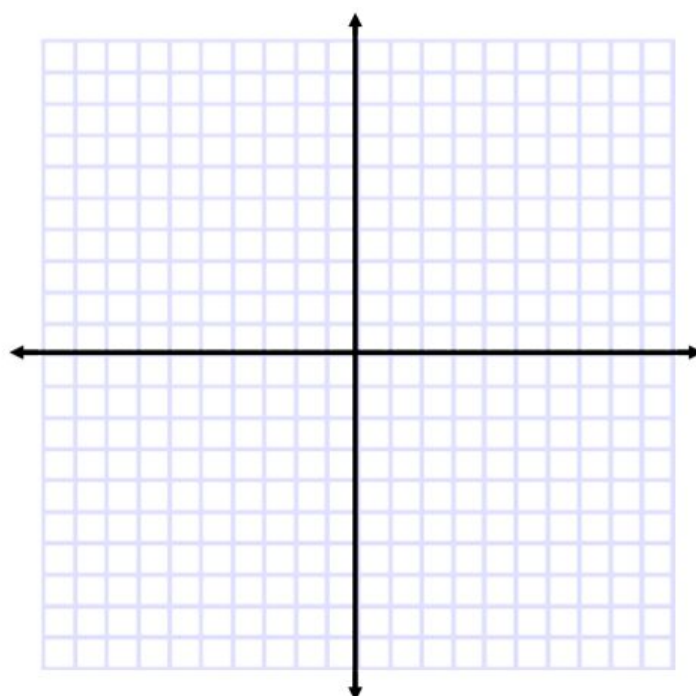
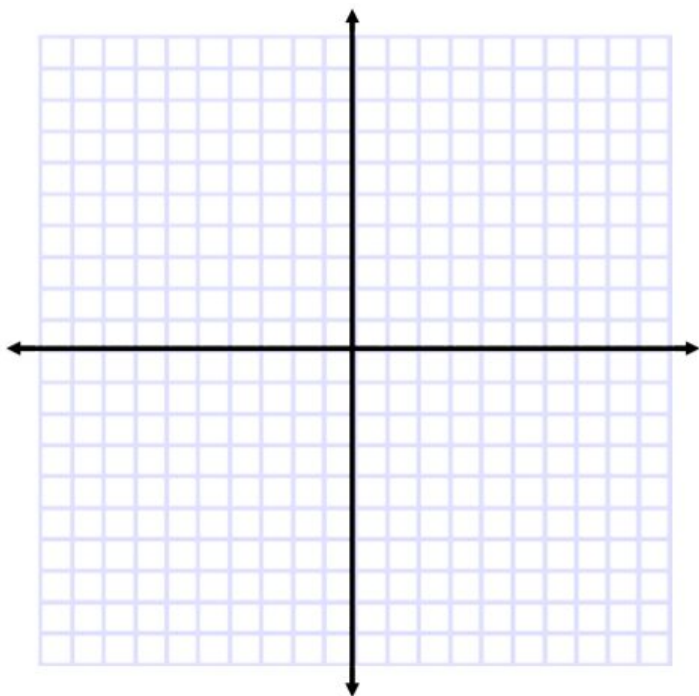
18.



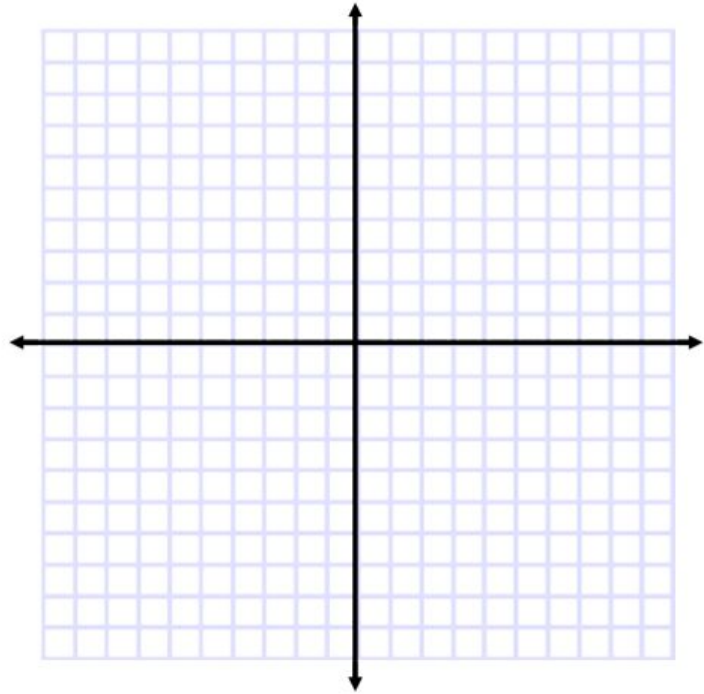
State in words the transformation(s) from the parent function $f(x)$ to $g(x)$. Then graph and label both $f(x)$ and $g(x)$ on the same coordinate plane.

19. $g(x) = -2(x + 3)^2 + 8$

20. $g(x) = \sqrt{x + 4} - 5$



21. $g(x) = \sqrt[3]{x-2} + 7$



Solve the quadratic equation by factoring:

22. $x^2 + 7x - 30 = 0$

23. $3x^2 - 21x = 0$

Solve the quadratic equation using the quadratic formula:

24. $x^2 + 2x + 12 = 0$

25. $2x^2 - 4x = 15$

State the domain of each rational expression.

26. $\frac{x}{x^2+3x}$

27. $\frac{x+5}{2x^2+9x-5}$

Simplify each rational expression and state any restriction(s) on variable(s).

28. $\frac{25x^2-4}{5x^2+7x+2}$

Multiply or divide as indicated and state any restriction(s) on variables.

29. $\frac{2x^3y}{7x^4y^2} \cdot \frac{14xy}{4y}$

30. $\frac{2x^2+7x+3}{4x^2-1} \div \frac{x^2-9}{8x^2-4x}$

31. $\frac{5x^2-14x-3}{6x-18} \cdot \frac{x^2-8x+15}{25x^2-1}$

Add or subtract as indicated and state any restriction(s) on variables.

$$32. \frac{2}{9x^2y^3} - \frac{5x}{6y^4}$$

$$33. \frac{2x}{x-8} + \frac{16}{8-x}$$

$$34. \frac{5}{x-1} + \frac{8}{x+4}$$

$$35. \frac{3x}{x^2-2x-8} - \frac{2}{x^2+6x+8}$$

Simplify each complex fraction.

$$36. \frac{\frac{-6x}{x^2-4} + \frac{2}{x+2}}{\frac{4}{x-2} - \frac{2}{x+2}}$$

$$37. \frac{\frac{1}{x} + \frac{5}{x^2} - \frac{14}{x^3}}{x - \frac{4}{x}}$$